REMARKS

Amendment E is hereby provided after careful consideration of the Examiner's comments set forth in the Office Action mailed May 1, 2009. Claims 1, 2, 4-6, 8, 9, 11, 14-17, 19-23, 26, and 29-36 remain in the application after Amendment E is entered. Reconsideration of the application is respectfully requested in view of the amendments and remarks provided herein.

The Office Action

Claims 1, 2, 4, 5, 8, 11, 15-17, 19, 20, 23, 26, and 29-36 stand rejected under 35 U.S.C. § 103(a) for allegedly being anticipated by U.S. Patent Application Publication No. 2004/0223504 to Wybenga et al. in view of U.S. Patent Application Publication No. 2005/0201387 to Willis.

Claims 6, 14, and 21 stand rejected under 35 U.S.C. § 103(a) for allegedly being obvious over Wybenga and Willis in view of additional background information in Wybenga.

Claims 9 and 22 stands rejected under 35 U.S.C. § 103(a) for allegedly being obvious over Wybenga and Willis in view of U.S. Patent Application Publication No. 2005/0078696 to Oner.

The Art Rejections

Claims 1, 2, 4, 5, 8, 11, 15, 16, 29, and 30 Patentably Distinguish Over the Combination of Wybenga and Willis.

Independent claim 1 is directed to a digital communication system that includes "a plurality of nodes interconnected through a fabric" in which "at least one node" includes "a plurality of network processing devices" with "at least one network processing device for receiving digital information, for determining a destination ... for the digital information, and for providing the digital information to the destination; a shared bus structure ...; and an interface ... coupling the at least one network processing device with the fabric ...; wherein each at least one node supports native transport of digital information to and from the fabric in a plurality of network protocols,

including network protocols for transporting cell information and network protocols for transporting packet information; wherein each at least one network processing device supports routing and forwarding of digital information ... in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information."

Wybenga identifies Samsung products that provide a distributed architecture for an IP router where multiple routing engines distribute the workload of managing the interfaces and maintaining the routes (see para 9).

The Wybenga router includes a plurality of processors that exchange data packets with each other over a common bus where a source processor transmits a data packet to a destination processor by storing the data packet in an output queue and transmitting an interrupt message to the destination processor. In response to the interrupt message, the Wybenga destination processor reads the data packet from the output queue. See para 21.

Wybenga also discloses a router 100 with N independent routing nodes (RN) 110, 120, 130, 140 connected by a switch 150 that includes a pair of high-speed switch fabrics 155a, 155b. Each Wybenga routing node includes an input-output processor (IOP) module 126 and one or more physical medium device (PMD) modules 122, 124. See para 35; FIG. 1.

Additionally, Wybenga discloses that each IOP module 116, 126, 136, 146 buffers incoming Internet protocol (IP) packets from subnets 195 or adjacent routers 190. Each Wybenga PMD module 122, 124 frames an incoming packet (or cell) from an IP network (or ATM switch) to be processed in an IOP module and performs bus conversion functions. See para 36; FIG. 1.

The Wybenga IOP module 126 includes a classification processor 230, a system processor 240, an asynchronous variable controller 250, a network processor 260, a peripheral component interconnect (PCI) bridge 270, and a Gigabit Ethernet connector 280. A PCI bus 290 connects the Wybenga PCI bridge 270, classification processor 230, system processor 240, and asynchronous variables controller 250 of the IOP module 126. The Wybenga PCI bus 290 also connects the IOP module 126 and PMD modules 122, 124. See para 39; FIG. 2.

The Wybenga IOP module 126, PMD module 122 and PMD module 124 provide hardware support for communications among processors in the form of PCI bus 290, doorbell interrupts, and asynchronous (async) variables. The Wybenga PCI bus 290 interconnects the processors on the IOP module and PMD modules. Each of Wygenga PMD processor 213 and 223, classification processor 230, system processor 240, asynchronous variables controller 250 and network processor 260 is capable of mastering PCI bus 290. The Wybenga PCI bridges 212, 222 and 270 separate the PMD processors 213 and 223 and network processor 260 from the rest of the PCI devices. Thus, each one of network processor 260 and PMD processor 213 and 223 in Wybenga has a PCI bridge in front of it. These bridges are provided to compensate for the low drive capability of the Wybenga PMD processors 213 and 223 and network processor 260. See para 40; FIG. 2.

As noted in the May 1, 2009 Office Action, Wybenga does not explicitly teach a node that supports native transport of digital information to and from a fabric in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information; wherein each at least one network processing device supports routing and forwarding of digital information within corresponding nodes in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information (see page 3, last para).

Willis discloses a communication node with intelligence for directing both internet protocol (IP) packets and Asychronous Transfer Mode (ATM) cells toward their destinations. The ATM cells and IP packets may be received within a common data stream in Willis. The respective Willis devices process the ATM cells and IP packets to direct the cells and packets to the proper output ports towards their destinations. The Willis device is capable of performing policing and quality of service (QOS) processing on both the ATM cells and the IP packets. See Abstract.

Willis also discloses processing from input to output for a given data stream that includes an OC-48 input data stream 90 that is first demultiplexed 92 into the separate tributaries (also known as "channels"). The data within each Willis channel is decapsulated 94 to remove the data from SONET frames and layer 2 frames. ATM

input processing 96 is performed on ATM cells of the input data in the Willis data stream. IP input processing 98 is performed on IP packets of the input data in the Willis data stream. Data passes from the Willis input processing over the interconnect 62 to an output line card. The Willis output line card performs output processing 102, which includes queuing and traffic shaping 102. Encapsulation 104 is performed on the Willis data and the respective tributaries are multiplexed 106 to produce an OC-48 output data stream 108. See para 56; FIG. 7.

The Willis processing leverages the infrastructure of SONET/SDH to support multiple data encapsulations. The incoming data in Willis is encoded in a SONET format. The Willis input processing initially demultiplexes the incoming data into the respective SONET/SDH tributaries (110). The Willis input processing is in effect performed on all of the tributaries simultaneously. The Willis OC-48 data stream 90 is logically demultiplexed by SONET demultiplexers 92. See para 57; FIGs. 8 and 9.

The resulting data in the respective Willis tributaries may be in any of a number of different formats. A receive ASIC 70 delineates this data (112) to gain access to the ATM cells, PPP frames or FR frames carried therein (94) in the Willis processing. Each IP packet may be composed of multiple ATM cells or may be contained in a PPP frame or FR frame in the Willis processing. See para 58; FIGs. 7 and 8.

Notably, Willis does not disclose or fairly suggest a digital communication system with a plurality of nodes interconnected through a fabric in which a node includes a network processing device that supports routing and forwarding of digital information in a network protocol for transporting cell information and a network protocol for transporting packet information in which the node supports native transport of digital information to and from the fabric in a network protocol for transporting cell information and a network protocol for transporting packet information. Rather, Willis discloses a node in which the input and output data is multiplexed and encapsulated. Moreover, within the Willis node, input processing includes demultiplexing and decapsulation prior to routing through an interconnect switch. Thus, the data passing through the Willis interconnect switch is not in network protocols for transporting cell information or packet information.

In summary, we note that neither Wybenga nor Willis disclose or fairly suggest a node that supports native transport of digital information to and from a fabric in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information or a network processing device that supports routing and forwarding of digital information within a corresponding node in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information as recited in claim 1.

Based at least on the foregoing, it is submitted that claim 1 is patentably distinguished from the combination of Wybenga and Willis. Accordingly, the Applicant respectfully submits that independent claim 1 and claims dependent thereon (e.g., claims 2, 4, 5, 8, 11, 15, 16, 29, and 30) are currently in condition for allowance.

Claims 17, 19, 20, 23, 26, 31, and 32 Patentably Distinguish Over the Combination of Wybenga and Willis.

Independent claim 17 is directed to a communication node that includes "a plurality of network processing devices" with "at least one network processing device for receiving digital information, for determining a destination ... for the digital information, and for providing the digital information to the destination ...; a shared bus structure ...; and a System Interface ...; wherein the communication node supports native transport of digital information to and from other nodes of a communication network in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information; wherein each at least one network processing device supports routing and forwarding of digital information within the communication node in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information."

In addition to the Wybenga and Willis disclosures identified above, Wybenga also discloses PCI bridges 212, 222 and 270 that provide Message Signaled Interrupts (MSI) signals. This Wybenga feature enables a device to request service (i.e., generate an interrupt request to a processor) by writing a system-specified message to a system-

specified address using a PCI DWORD memory write transaction. The Wybenga system processor 240 implements this feature in the form of its Message Unit (MU) with its associated generic message and doorbell register interface. A doorbell interrupt is initiated when the Wybenga device performs a write operation to a pre-defined Configuration Data Register. This Wybenga interrupt can be enabled and disabled. The Wybenga PMD processors 213 and 223 and network processor 260 implement this feature using the doorbell interrupt. A Wybenga PCI device writes to the doorbell register to generate an interrupt. The DBELL_SA_MASK and DBELL_PCI_MASK registers can be used to mask these Wybenga interrupts. See para 41; FIG. 2.

Notably, neither Wybenga nor Willis disclose or fairly suggest a communication node that supports native transport of digital information to and from other nodes of a communication network in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information or a network processing device that supports routing and forwarding of digital information within the communication node in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information as recited in claim 17.

Based at least on the foregoing, it is submitted that claim 17 is patentably distinguished from the combination of Wybenga and Willis. Accordingly, the Applicant respectfully submits that independent claim 17 and claims dependent thereon (e.g., claims 19, 20, 23, 26, 31, and 32) are currently in condition for allowance.

Claims 33-36 Patentably Distinguish Over the Combination of Wybenga and Willis.

Independent claim 33 is directed to a digital communication system that includes "a plurality of communication nodes interconnected through an interconnect fabric" in which "at least one communication node" includes "a plurality of network processing devices; a shared bus structure ...; and a plurality of interfaces" with "at least one interface coupling at least one network processing device with the interconnect fabric" in which "the at least one network processing device receives digital information ..., determines a destination ... for the digital information, and provides the digital

information to the destination; wherein <u>each at least one communication node supports native transport of digital information to and from the interconnect fabric in a plurality of network protocols</u>, including <u>network protocols for transporting cell information</u> and <u>network protocols for transporting packet information</u>; wherein <u>each at least one network processing device supports routing and forwarding of digital information … in a plurality of network protocols</u>, including <u>network protocols for transporting cell information</u> and <u>network protocols for transporting packet information</u>."

The May 1, 2009 Office Action generally uses the same reasons for rejection of independent claim 33 as for the § 103(a) rejection of claim 1. Therefore, the disclosures of Wybenga and Willis identified above are also related to arguments distinguishing claim 33.

Notably, neither Wybenga nor Willis disclose or fairly suggest a communication node that supports native transport of digital information to and from an interconnect fabric in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information or a network processing device that supports routing and forwarding of digital information within corresponding communication nodes in a plurality of network protocols, including network protocols for transporting cell information and network protocols for transporting packet information as recited in claim 33.

Based at least on the foregoing, it is submitted that claim 33 is patentably distinguished from the combination of Wybenga and Willis. Accordingly, the Applicant respectfully submits that independent claim 33 and claims dependent thereon (e.g., claims 34-36) are currently in condition for allowance.

<u>Claims 6, 14, and 21 Patentably Distinguish Over the Combination of Wybenga, Willis, and Additional Background Information in Wybenga</u>.

Claim 6 depends from independent claim 1. Accordingly, claim 6 is patentably distinct from the combination of Wybenga, Willis, and additional background information in Wybenga for at least the same reasons provided above distinguishing claim 1 from the combination of Wybenga and Willis. Based at least on the foregoing, the Applicant respectfully submits that claim 6 is currently in condition for allowance.

Similarly, claim 14 depends from claim 11 which in turn depends from independent claim 1. Accordingly, claim 14 is patentably distinct from the combination of Wybenga, Willis, and additional background information in Wybenga for at least the same reasons provided above distinguishing claim 1 from the combination of Wybenga and Willis. Based at least on the foregoing, the Applicant respectfully submits that claim 14 is currently in condition for allowance.

Claim 21 depends from independent claim 17. Accordingly, claim 21 is patentably distinct from the combination of Wybenga, Willis, and additional background information in Wybenga for at least the same reasons provided above distinguishing claim 17 from the combination of Wybenga and Willis. Based at least on the foregoing, the Applicant respectfully submits that claim 21 is currently in condition for allowance.

Claims 9 and 22 Patentably Distinguish Over the Combination of Wybenga, Willis, and Oner.

Claim 9 depends from claim 8 which in turn depends from independent claim 1. Accordingly, claim 9 is patentably distinct from the combination of Wybenga, Willis, and Oner for at least the same reasons provided above distinguishing claim 1 from the combination of Wybenga and Willis. Based at least on the foregoing, the Applicant respectfully submits that claim 9 is currently in condition for allowance.

Claim 22 depends from independent claim 17. Accordingly, claim 22 is patentably distinct from the combination of Wybenga, Willis, and Oner for at least the same reasons provided above distinguishing claim 17 from the combination of Wybenga and Willis. Based at least on the foregoing, the Applicant respectfully submits that claim 22 is currently in condition for allowance.

CONCLUSION

For the reasons detailed above, it is respectfully submitted all claims remaining in the application (Claims 1, 2, 4-6, 8, 9, 11, 14-17, 19-23, 26, and 29-36) are now in condition for allowance. The foregoing comments do not require unnecessary additional search or examination.

In the event the Examiner considers personal contact advantageous to the disposition of this case, he/she is hereby authorized to telephone Alan C. Brandt, at (216) 363-9000.

Respectfully submitted,

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